REMARKS

Claims 1- 5, 9-15, 17 and 19 are pending. Claims 16 and 18 have been cancelled. Claims 1, 2, 4, 5, 9, 12 and 17 have been amended. Claim 15 was withdrawn from consideration in response to the restriction requirement mailed June 18, 2002. No new matter has been added.

Applicant respectfully requests reconsideration in view of the foregoing amendments and these remarks.

Claims 4, 9-14, 16, 18 and 19 stand rejected under 35 U.S.C. §112, first paragraph, as containing subject matter not described in the specification. Claims 4 and 9 have been amended to overcome these rejections.

Applicant believes that the language,"the outer surface is rougher than the inner surface," now recited in claims 1, 9 and 19, is supported by the specification. The specification teaches that the "bottom of the flexible membrane may be roughened to increase its friction coefficient" (page 3, lines 5-6). The specification also teaches that "specifically, the flexible membrane 122 can have a roughened lower surface 124. For example, one surface of the membrane 122 can be abraded, e.g., with sandpaper to roughen it prior to installation of the membrane in the carrier head." (page 6, lines 23 - 25). Thus, the specification supports that one surface of the membrane is rougher than the other, since the specification teaches that one surface is roughened while the other is not.

Examiner indicated that claims 16, 18 and 19 include allowable subject matter. The features of claims 16 and 18 have been incorporated into claims 1 and 9, respectively. Thus, it is believed that claims 1, 9 and 19, and their dependent claims are allowable.

Claims 2, 5 and 17 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite. Claim 2, 5 and 17 have been amended to overcome these rejection.

Attached is a marked-up version of the changes being made by the current amendment.

Applicant asks that all claims be allowed. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: 11/22/02

David J. Goren
Reg. No. 34,609

Fish & Richardson P.C.
500 Arguello Street, Suite 500
Redwood City, California 94063
Telephone: (650) 839-5070
Facsimile: (650) 839-5071

50107977.doc

Version with markings to show changes made

In the claims:

Claim 16 and 18 have been cancelled.

Claims 1, 2, 4, 5, 9, 12 and 17 have been amended as follows:

1. (*Amended*) A carrier head, comprising:

a retaining ring;

a pressurizable chamber; and

a fluid-tight flexible membrane with an inner surface that forms a boundary of the pressurizable chamber and a rough outer surface to press a substrate against a polishing surface, wherein the outer surface is rougher than the inner surface.

2. (*Amended*) The carrier head of claim 1, wherein the outer surface of the flexible membrane is sufficiently rough that the substrate does not move [or rotate] relative to the membrane.

3. The carrier head of claim 1, wherein the flexible membrane is formed of a material having a high friction coefficient.

4. (*Amended*) The carrier head of claim 1, wherein the outer surface of the flexible membrane includes [macroscopic] features to increase its friction coefficient.

5. (*Amended*) The carrier head of claim 1, wherein the friction coefficient of the outer surface of the flexible membrane is sufficiently high that the substrate does not move [or rotate] relative to the membrane during polishing.

9. (*Amended*) A carrier head, comprising:

a retaining ring;

a pressurizable chamber; and

a flexible membrane to press a substrate against a polishing surface, the flexible membrane including an inner surface that forms a boundary of the pressurizable chamber and an outer surface having [macroscopic] surface features to increase a friction coefficient of the outer surface, wherein the outer surface is rougher than the inner surface.

10. The carrier head of claim 9, wherein the flexible membrane is formed of a material having a high friction coefficient.

11. The carrier head of claim 9, wherein the outer surface of the flexible membrane is roughened to increase its friction coefficient.

12. (*Amended*) The carrier head of claim 9, wherein the friction coefficient of the flexible membrane is sufficiently high that the substrate does not move [or rotate] relative to the membrane.

13. The carrier head of claim 9, wherein the features are grooves.

14. The carrier head of claim 9, wherein the features are vias.

15. A method of assembling a carrier head comprising:

abrading a flexible membrane to provide the membrane with a roughened surface;

installing the flexible membrane in the carrier head in a position to apply pressure to a substrate.

17. (*Amended*) The carrier head of claim [1] 4, wherein the features are selected from grooves and vias.

19. A carrier head, comprising:

a retaining ring;

a pressurizable chamber; and

a fluid-tight flexible membrane with an inner surface that forms a boundary of the pressurizable chamber and an outer surface to press a substrate against a polishing surface, wherein the outer surface is rougher than the inner surface.